

and distinctly claim the subject matter which Applicant regards as the invention. More specifically, the Examiner points out that it is not described in the claim which synthesis apparatus is arranged to perform the method of claim 1. Applicants respectfully traverse the rejection.

It is submitted that any synthesis apparatus which operates in accordance with the steps recited in method claim 1 has been definitely claimed. Accordingly, Applicants do not agree that claim 15 is in any way indefinite. Claim 15 specifically recites that the claimed synthesis apparatus is to perform in accordance with the method recited in claim 1. Accordingly, Applicants respectfully request that the Examiner withdraw the §112, second paragraph rejection to this claim.

The Examiner has also rejected claims 1, 3-5, 7-11 and 15 under 35 U.S.C. §102(b) as being anticipated by Masaki and has rejected claim 2 under 35 U.S.C. §103(a) as being unpatentable over Masaki. Applicants respectfully traverse the rejections.

Masaki does not disclose a method of generating a waveform from a sequential series of synthetic waveforms. In Masaki, recorded waveform data portions are combined together by interpolation to produce a waveform that corresponds accurately to the waveform produced by a classical musical instrument. In contrast, the present invention defines an apparatus that generates each sample value based on (i) the immediately previous sample value;

and (ii) data representing the evolution of the waveform in the temporal vicinity of the previous sample.

Masaki forms synthesized waveform data ( $S_{uvw}(\omega t)$ ) from eight fundamental waveform data segments ( $F_{ijk}$  to  $F_{(i+1)(j+1)(k+1)}$ ) for each period of the output acoustic waveform. Each sample of the output synthesized waveform signal described in Masaki is merely a weighted combination of sample values from the eight fundamental waveforms. It follows that each sample of the synthesized waveform does not depend on the immediately previous sample value. Hence, step (b) and therefore step (c) of claim 1 are not disclosed in Masaki,

Accordingly claim 1 and its respective dependent claims 2-11 and 15 are believed to patentably define over Masaki. Some additional comments regarding the patentability of the dependent claims are made below.

The passage of Masaki referred to by the Examiner in respect of claim 3 teaches waveform data storing means and musical tone designating means. It does not make any mention of any data that defines a transformation followed by cycles in the temporal vicinity of a cyclical sound waveform sample and as such does not teach or suggest this patentable feature of claim 3.

The passage of Masaki referred to by the Examiner in respect of claim 4 teaches waveform data storing means and musical tone designating means. It does not make any mention of speech waveforms and as such cannot teach or

suggest this patentable feature of claim 4.

The subject matter of claim 5 is a multidimensional state space representation of a signal in which successive pitch pulse cycles are superposed to estimate the progression of the signal within each cycle and from cycle to cycle. Therefore the passage of Masaki referred to by the Examiner, which teaches storing a plurality of fundamental waveforms in an n-dimensional array which is addressable by n-parameters, does not teach or suggest the patentable features of claim 5.

The passage of Masaki referred to by the Examiner in respect of claim 7 is part of the detailed description of the operation of the electronics that perform the interpolation between stored waveforms. It does not teach anything regarding the derivation of successive waveform samples in accordance with data from points on a reference waveform sample, as is required by present claim 7.

Claim 8 contains a reference to step (b) of claim 1 (which is not taught by Masaki as shown above) and therefore again contains a feature which is not taught or suggested by Masaki.

Claim 10 is directed towards selecting an initial value at the start of the synthesis process. The selection of an initial value in Masaki is done by a person who decides in his head which key on a keyboard to press and in what way to press it. It is not done by applying a pseudo-random number generation algorithm, as is required by present claim 10.

The apparatus claimed in claim 15 is arranged to perform a method that has been proven to be novel and inventive using the above arguments. Therefore the apparatus itself must also be novel and inventive.

The Examiner writes that it would have been obvious to one of ordinary skill in the art at the time of invention to generate a voiced speech waveform so as to create naturally sounding speech. What the Examiner seems to be contending is that it would be obvious to modify Masaki in such a way that it can be used as a speech synthesizer.

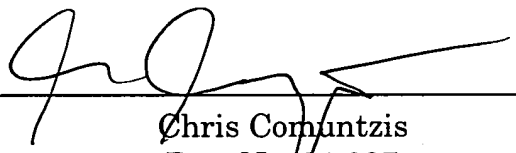
However, the Examiner has failed to show in the Office Action how to make such a modification. Furthermore, it would not have been obvious to a skilled person how to make such a modification. For example, Masaki relies on the performer to provide the stimulus on a keyboard in order to vary the output waveform segment.

In the generation of synthetic speech no such stimulus is available. It is not obvious what could be used as a stimulus were Masaki to be modified to generate synthetic speech. A person of ordinary skill in the art would be stumped by this lack of a suitable stimulus. Hence claim 2 also further patentably defines over the cited reference.

Therefore, in view of the above remarks it is respectfully requested that the application be reconsidered and that all of claims 1-11 and 15-17 standing in the application, be allowed, and that the case be passed to issue. If there are any other issues remaining which the Examiner believes could be resolved through either a Supplement Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the local telephone exchange indicated below.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By:   
Chris Comuntzis  
Reg. No. 31,097

CC:slb  
1100 North Glebe Road, 8th Floor  
Arlington, VA 22201-4714  
Telephone: (703) 816-4075  
Facsimile: (703) 816-4100